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Date: May 2, 2011 Name: Jasper W. Dockrey, Reg. 33,868 Signature: /Jasper W. Dockrey/

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Appln. of: Bernard ASPAR et al.

Appln. No.: 10/534,199

Filed: May 6, 2005

For: METHOD FOR FORMING A  
BRITTLE ZONE IN A  
SUBSTRATE BY CO-  
IMPLANTATION

Attorney Docket No: 9905/25(BIF023239/USA)

Examiner: Bradley Smith

Art Unit: 2894

Confirmation No. 1400

**REPLY BRIEF**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

This Reply Brief is submitted pursuant 37 CFR §41.41 in response to the Examiner's Answer of March 3, 2011.

## ARGUMENT

The appellant respectfully submits its reply to the issues and additional points of argument raised in the Examiner’s Answer.

### Venezia et al.

The Examiner alleges that the appellant has misquoted text from the technical article published by Venezia et al. (Examiner’s Answer, pg. 7, ll. 15-21). The article at issue was published by Venezia et al. in the Electrochemical Society Proceedings, Volume 98-1, at pages 1385-1394. The appellant cited this article in its response of December 7, 2009 and included a copy of this article along with the response. A courtesy copy of this publication is attached hereto. At page 1388, the last sentence of the leading paragraph is reproduced as follows:

“Therefore, it is simply the presence of the He gas in the H-rich region that leads to the formation of surface blisters, and **presumably** makes the thin-film separation process more efficient.”

The Examiner asserts that the word “presumably” should be “thus.” Under the Examiner’s assertion the last sentence of the leading paragraph on page 1388 reads: “it is simply the presence of the He gas in the H-rich region that leads to the formation of surface blisters, and thus makes the thin-film separation process more efficient.” According to the Examiner, the word “thus” eliminates uncertainty in the teaching of Venezia et al. (Examiner’s Answer, *id.*).

Upon review, it appears that the Examiner is quoting from a pre-published version of the article cited by the Examiner in the Office Action of January 20, 2010. Apparently, the authors revised their article prior to its actual publication in the Electrochemical Society Proceedings. This implies that the authors did not wish to state a conclusion in their published article, but only a presumption regarding any efficiency improvement from the combination of He and H introduced in the

substrate. This interpretation is supported by the authors' statement in the published article that "the He implant played little role in improving the efficiency of the formation of surface blisters at lower doses." (Pg. 1386, second full paragraph). Regardless of the nuance in word selection at issue, the appellant continues to assert that one skilled in the art would not understand Venezia et al. to suggest any benefit associated with implantation of He and H at disparate implantation energies.

The Examiner further asserts that an advantage that flows naturally from the prior art cannot be the basis for patentable differences. (Examiner's Answer, pg. 8, ll. 3-9). The appellant asserts that the claimed process constitutes more than simply another advantage flowing from the teaching of Venezia et al. The claimed process differs from implanting He and H at the same depth. Indeed, not having to deal with the process complexity of implanting He and H at different depths, for example, would be an advantage flowing from the teaching of Venezia et al. Thus, there is no advantage flowing from Venezia et al. to use disparate implantation energies. Accordingly, Venezia et al. do not suggest a technical advantage that would improve the process described in Agarwal et al., for example, such as improving the surface quality. The appellant asserts that this advantage is only realized by the inventive method, as defined by the appellant's claims.

The Examiner asserts that Venezia et al. disclose annealing deeply implanted He so that it migrates to the H-rich region to make the separation process more efficient. (Examiner's Answer, pg. 8, ll. 12-15). The examiner again points to the last sentence of the leading paragraph at page 1388 of Venezia et al., discussed above. The appellant fails to find a suggestion that the process recited by the appellant's claims is disclosed as an efficiency improvement by Venezia et al. Regardless of the different versions of the referenced portion of Venezia et al., this language at most describes a potential efficiency improvement by the presence of He in the H-rich region.

The Examiner further asserts that Venezia et al. do not describe efficiency improvement with implantation of He and H at the same depth. (Examiner's Answer, pg. 9, ll. 6-9, pg. 10, ll.1-3). The Examiner alleges that the contrary teaching stems

from the evidence in the record. The appellant asserts that its conclusion of the teaching is just as valid as the Examiner's conclusion. The appellant respectfully asserts that labeling the appellant's conclusion as "attorney argument" does not mean that the Examiner's conclusion is somehow more valid or is more accurate. The change in the authors' wording of the paragraph cited above, suggests that even the authors are unconvinced as to the efficiency improvement associated with implanting He and H. Venezia et al. further state in this same paragraph as follows:

"Comparison of Figs. 1a and 1b shows that separating the implant profiles has no significant effect on the surface blistering. Since the blistering remained essentially unchanged as a result of placing the He damage deeper than the H damage, we can conclude that the effects of the damage induced by the He did not play a significant role in enhancing the formation of the surface blisters at lower doses." (Venezia et al., Pg. 1388, *Id.*).

The appellant asserts that the strong implication from this language is that efficiency exists in implantation of H and He at the same depth, and certainly does not support the Examiner's assertion that Venezia et al. teach that deeply implanting He, so that it migrates to the H-rich region, makes the separation process more efficient. Even the disputed section more supports the appellant's conclusion than the Examiner's conclusion. Regardless of the word "presumably" or "thus," the sentence states that it is simply the presence of the He gas in the H-rich region that leads to the formation of surface blisters and, presumably or thus, makes the thin-film separation process more efficient. The appellant asserts that one skilled in the art would not understand Venezia et al. to suggest that a process improvement could be realized by separating H and He in the substrate.

### **Venezia et al. and Agarwal et al.**

The Examiner alleges that it would be obvious to combine the teaching of Venezia et al., as interpreted by the Examiner, with Agarwal et al. because increasing the implantation depth would separate the damage of H and He. (Examiner's Answer, pg. 10, ll. 15-16). The appellant asserts that Venezia et al. teach that it is preferable to

implant hydrogen and helium to the same depth in the substrate. As shown above, Venezia et al. explicitly state that implantation of helium and hydrogen is more efficient when carried out at the same implant depth. The appellant further asserts that there is no reason why a person of skill in the art would seek to separate the damage from H and He in the process of Agarwal et al. This reference discloses a synergistic effect when H and He gas implants are combined and that the synergistic effect enables the H implant dose to be reduced. (Agarwal et al., pg. 1088, right column, last paragraph and continuing to left column, ll. 1-18). When properly read, Venezia et al. confirm that there is a benefit from implanting H and He: “[t]herefore it is simply the presence of the He gas in the H-rich region … that makes the thin-film separation process more efficient.” (Venezia et al., pg. 1388, emphasis added). Accordingly, the appellant asserts that one skilled in the art would not find Venezia et al. to suggest that the implantation process disclosed by Agarwal et al. should be modified to implant helium and hydrogen at separate depths in the substrate. The combination of Venezia et al. and Agarwal et al. do not suggest or disclose implanting a first species to a first depth to form a buried weak region, followed by implanting a second species to a second different from the first depth and diffusing second species into a weak buried region, followed by initiating a fracture along the first depth.

For the reasons set forth above, it is submitted that appellant’s claims are not obvious over the cited references taken alone or in combination. The appellant asserts a *prima facie* case of obviousness and has not been established. Accordingly, this rejection is improper and the appellant respectfully requests that it be reversed.

Respectfully submitted,

/Jasper W. Dockrey/

Jasper W. Dockrey  
Registration No. 33,868  
Attorney for Appellant

BRINKS HOFER GILSON & LIONE  
P.O. BOX 10395  
CHICAGO, ILLINOIS 60610  
312/321-4200